



Sporotrichosis in Iran

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Summary This report describes a 23 year-old male florist gardener diagnosed with subcutaneous sporotrichosis caused by the dimorphic pathogenic soil fungus *Sporothrix schenckii*. The patient had several small skin lesions over the left upper arm with ascendant chains of enlarged lymph nodes. *Sporothrix schenckii* was detected from clinical samples by direct microscopy and culture and its ability to switch from mould to yeast form at 37 °C. The patient was successfully treated with long-term potassium iodide and advised to wear gloves and long sleeves when handling any kind of plant material.

Key words Sporotrichosis, *Sporothrix schenckii*, Florist, Iran

Esporotricosis en Irán

Resumen En este trabajo se presenta el caso de un varón de 23 años de edad, floricultor y jardinero, que presentó una micosis subcutánea debida al hongo dimorfo y geófilo *Sporothrix schenckii*. Las lesiones cutáneas fueron múltiples, ubicadas en el miembro superior izquierdo, con una cadena de nódulos que ascendían por un trayecto linfático. El diagnóstico fue confirmado por la observación microscópica del agente causal en una muestra clínica, su posterior aislamiento en cultivo y la conversión de la forma micelial en levaduriforme. El paciente fue tratado exitosamente con yoduro de potasio por vía oral y termoterapia. Se le recomendó el uso de guantes protectores y mangas largas para realizar su trabajo.

Palabras clave Esporotricosis, *Sporothrix schenckii*, Florista, Irán

Sporotrichosis is a subacute or chronic granulomatous infection in humans, as well as in a wide range of domestic and wild animals. It is caused by the pathogenic soil dimorphic fungus *Sporothrix schenckii* [21-24]. Infection is the result of skin traumatic inoculation through small cuts or punctures from soil, woody fragments of plants and other organic matter contaminated with *S. schenckii* [5,34]. In most cases, clinical progression is slow and a skin bump of sporotrichosis can appear within 1-3 weeks after fungal exposure [2,15,33]. The fungus spreads by local deep tissue invasion from the inoculation site and the infection usually remains localized, spreading slowly to adjacent tissue and

eventually to the lymphatic vessels [2,18,23]. Blood vessel dissemination has been rarely reported [18,31,33].

Sporotrichosis is highly endemic in South America. However, the global occurrence of sporotrichosis is largely unknown [3,12,20,25]. In the Americas, the incidence of infection, especially in the highlands of Peru, is approximately 1 case per 1000 people. Zoonotic transmission of this mycosis is rare, but small outbreaks can occur from infected cats, from horses with extensive skin lesions and amongst handlers in other cases of animal husbandry [6,8,33]. Recently an outbreak of sporotrichosis in Rio de Janeiro and Sao Paulo was caused by domestic cat [6-8,22,28-30]. The first symptoms of the infection are followed by additional bumps that can split and which are very difficult to heal. The typical form of this mycosis, termed lymphocutaneous sporotrichosis, involves suppurating subcutaneous nodules that progress proximally through and along lymphatic vessels, forming a chain of indolent nodular and/or ulcerating lesions [2,15,18,21,23,24,34]. Sporotrichosis has been reported in joints, bones, tendon, sheaths, in the respiratory system, and in the central nervous system including the meninges. Disseminated infection with involvement of multiple visceral organs can occur, particularly in patients with acquired immunodeficiency syndrome (AIDS); but this type of sporotrichosis in patients with intact immune systems is rare [1,9,10,22].

A 23 year-old male florist and gardener with a history of skin trauma caused by rose bushes, was admitted to the medical mycology section of the School of Medicine.

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On admission the patient had a myriad of small skin lesions over the left upper arm with an ascendant chain of nodules, some of which were ulcerated and had irregular borders. The initial symptom was a small painless bump resembling an insect bite. No other lesions were observed on the arms or elsewhere.

Large yeast cells were observed by direct microscopy of the clinical samples (pus and scales). Culture of these samples was carried out using Sabouraud's dextrose agar (SDA), brain heart infusion (BHI) agar and SDA containing cycloheximide (SC). Cultured media were incubated at 37 °C and 25 °C for at least two weeks. The mould-to-yeast dimorphic switch was investigated by transferring the fungus (from which medium grown at which temp) to BHI, followed by incubation at 37 °C in 5-10% CO₂.

Direct microscopic examination of a colony grown on SC medium (at which temp) showed structures typical for *S. schenckii*: thin, septate hyphae with clusters of 3-6 µm x 2-3 µm ovoid to elongated conidia, grouped in a flower-like arrangement at the tips of simple conidiophores. Clinical samples incubated at 37 °C on BHI agar yielded soft yeast-like colonies with a white to grayish-yellow color that had spherical to oval or cigar-shaped 2-3 µm x 4-10 µm yeast cells, some of which were budding.

Treatment of subcutaneous mycoses usually involves antifungal agents and/or surgical excision; however this is not the case for sporotrichosis [13,17,27]. Potassium iodide (KI) was administered orally after mixing with juice or water. In this particular case, 5 drops of KI three times a day was initially prescribed, followed by 30 drops (6 ml/dose, 18 ml/day, 450 mg/day) for 3 months after which time the patient was considered cured. To avoid a relapse, the treatment was continued for an additional seven weeks after the disappearance of dermal symptoms. During treatment and follow-up, no side effects caused by KI were observed [10,17,13,27]. Thermotherapy at home with a hot water bottle was also recommended during this same period. The use of gloves and long sleeves was advised when handling pine seedlings, rose bushes, hay bales or other plants that could cause minor skin breaks. There were no signs of a relapse during the follow-up period of several months.

Despite worldwide distribution of sporotrichosis and other subcutaneous mycoses, this type of infection has been rarely diagnosed in Iran. Only seven human cases and one animal case of sporotrichosis were previously reported in Iran. In addition, some human cases of rhinosporidiosis have been reported, as well as mycetoma mainly

caused by *Pseudallescheria boydii*, *Actinomadura madurae*, *Madurella mycetomatis* and *Nocardia asteroides* [14,35]. The low number of sporotrichosis cases in Iran could be due to its rare occurrence or perhaps to the laboratory unfamiliarity with this fungal pathogen. Usually the number of microorganisms in clinical samples is very low and detection by direct microscopy requires experience. In particular, expert technicians are needed to carry out the dimorphic switch test. Specific consideration is also necessary for the differential diagnosis of sporotrichosis in clinics, particularly in non-endemic areas. Generally sporotrichosis is not an AIDS-related infection, though reports of sporotrichosis in individuals infected with HIV are increasing. However, only 22 reported cases of sporotrichosis in HIV patients have been recorded in the literature since the first report in 1984 [1,4,9,10,19,21,26].

Laboratory diagnosis is essential for the differential diagnosis of sporotrichosis because misdiagnosed cases have been treated as cutaneous leishmaniasis. This is understandable since sporotrichosis mimics much of the clinical features of this disease [11,32]. It is important to note that in the Northwest part of Iran, endemic areas for leishmaniasis have been reported and that therefore health services focus their attention on this particular problem. Technicians with expertise in medical mycology are often not available, thus complicating the differential diagnosis.

The authors wish to alert clinicians and other health service professionals who are active in areas endemic for leishmaniasis (such as Northwest Iran) about the potential presence of sporotrichosis, particularly taking into account at risk populations, such as farmers and horticulturalists.

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